September 11, 2013

Mr. Lawrence J. Corte, President
Western Nuclear, Inc.
2801 Youngfield, Suite 340
Golden, Colorado 80401

SUBJECT: GROUND WATER ISSUES AT THE SPLIT ROCK SITE AND REQUEST FOR ADDITIONAL INFORMATION

Dear Mr. Corte:

Following several years of conducting a ground water corrective action plan (GCAP) at the Western Nuclear, Inc. (WNI) Split Rock facility, WNI concluded that the GCAP was no longer effective in removing contaminants from former operations from the ground water. By letter of October 29, 1999 WNI requested alternate concentration limits (ACLs) and institutional controls (ICs) on off-site private property as an alternate approach to comply with the requirements of Appendix A to 10 CFR Part 40. On December 19, 2002, the Commission approved the use of ICs on private property to prevent human exposures to site-derived contaminants for the duration of the 1000-yr performance period. This approval of an alternate approach to compliance does not constitute an exemption to the performance criteria of Appendix A. To assess the impact of the proposed ACLs, in 2003 WNI modeled ground water flow using MODFLOW 2000, and contaminant transport using MT3D. NRC concurred with this set of models on July 24, 2003. On September 28, 2006, NRC issued Amendment 99 to SUA-56, approving the ACLs requested by WNI. To demonstrate compliance with the approved ACLs, and in preparation for transfer of the site to the Department of Energy (DOE) Office of Legacy Management (LM), WNI has conducted semi-annual sampling of the ground water at the site.

In its draft long term surveillance plan (LTSP) dated April 2012, DOE LM made observations about nitrate concentrations down-stream of the point of compliance (POC) wells at the Split Rock site and non-compliance with Criterion 5(B)1 of Appendix A to Part 40. Following phone conversations among WNI, its contractors, and U.S. Nuclear Regulatory Commission (NRC) staff about the draft LTSP and previous WNI actions related to ground water, Mr. Lou Miller, by letter dated February 6, 2013, provided a description of site ground water. That letter states, in part, that "…the values for all constituents, including nitrate are, and will remain protective outside of the long-term care boundary at any potential future point of exposure." This statement is based primarily on results of ground water flow and contaminant transport models he developed for the Split Rock site in the 2000 time frame. The recent data, however, have shown results that are not consistent with the model predictions. For example, nitrate concentrations in monitoring well SWAB-2, which is downstream of the POC well for the Southwest Valley, have been significantly increasing since 2005. The current values are more than four times the requested, approved ACL. Therefore, staff has additional questions about long-term contaminant migration in the Southwest Valley.

To resolve the compliance issue raised by DOE and other questions related to the definition and implementation of institutional controls at the site, in February 2013 NRC staff provided a draft request for additional information (RAI) to WNI and its contractors. During a meeting between NRC and WNI contractors at NRC headquarters on April 16, 2013 those questions were discussed in detail. WNI contractors provided satisfactory answers to all of the NRC's questions except those related to ACLs, ground water transport to the IC boundary, and the contaminant concentrations down-stream of the POC well in the southwest valley. At the conclusion of that meeting, WNI contractors stated they would provide a succinct description of the analyses and conclusions developed over several years of exchanges with NRC related to ACLs and the definition of the IC boundary.

By letter dated July 29, 2013, Chris Pugsley, Esq., provided a letter to NRC on behalf of WNI delineating the legislative history of Appendix A to Part 40, and how it allowed for alternate approaches to compliances. That letter goes on to say that NRC granted WNI an alternate approach and, therefore, WNI was in full compliance with the requirements of Part 40. Nothing in the letter address staff questions about contaminant transport or ACL exceedances downstream of the POC well. NRC did indeed grant WNI authorization for an alternate approach to complying with Appendix A. Specifically, NRC authorized WNI to use ICs on private property in lieu of active remediation of contamination to limit potential doses to members of the public. That fact is not now in question. NRC is satisfied that WNI has established acceptable ICs. The authorization for an alternate approach to compliance is not, however, an exemption to regulations.

What is now in question is the on-site concentrations and potential migration of regulated contaminates across the WNI-specified IC boundaries. In 1999 WNI requested ACLs for several regulated constituents on the Split Rock site, which NRC subsequently approved. In support of that application WNI presented ground water models showing that contaminant concentrations generally decrease from the POC wells to the IC boundaries, would not reach to boundaries in less than 1000 years, and would be within acceptable concentrations thereafter. The model predictions do not explain the data collected over most of the last decade, showing increases in several constituents in wells downstream of the POCs. In addition to varying significantly from the model predictions, the current condition is not in compliance with NRC regulations, such as Criterion 5(B)1 of Appendix A. Because the discussions with WNI on this subject have not resulted in a satisfactory solution to the issue, NRC is issuing the enclosed requests for additional information. The staff expects that the response to these RAIs will facilitate transfer of the site to DOE.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions concerning the above, please contact me at (301) 415-7479, or James Shepherd of my staff at (301) 415-6712 or via email at James.Shepherd@nrc.gov.

Sincerely,

/RA/ by B. Watson for

Andrew Persinko, Deputy Director
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Docket No.: 40-1162
License: SUA-56

cc: WNI Service List

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REQUEST FOR ADDITIONAL INFORMATION
WESTERN NUCLEAR INC.
SPLIT ROCK SITE

RAI 1

Description of Deficiency

In 1999 Western Nuclear Inc. (WNI) requested an alternate concentration limit (ACL) for nitrates in the SW Valley of 70.7 mg/l. NRC approved the request in 2006. Wells SWAB-2 and SWAB-1R are in the uppermost aquifer and are downstream of the point of compliance (POC) well for the SW Valley. Subsequent data for nitrate concentrations in SWAB-2 are greater than 300 mg/l, and in SWAB-1R are about 100 mg/l. These concentrations exceed the ACL.

Basis of the Request

Criterion 5B(1) of Appendix A to 10 CFR Part 40 states: "Hazardous constituents entering the ground water from a licensed site must not exceed the specified concentration limits in the uppermost aquifer beyond the point of compliance during the compliance period."

Formulation of RAI

WNI should define the sources of the contaminants causing the higher-than-predicted concentrations, including the nitrates in SWAB-2. WNI should provide updated ground water movement and contaminant transport results for the SW Valley that conform to recent data. WNI should describe how the site will comply with the requirements of Criterion 5B(1), or propose an alternative to the specific requirements, prior to transfer of the site to DOE and throughout the compliance period. Any proposed alternative must identify and take into account the objectives, technical alternatives and concerns in developing the long-term program.

RAI 2

Description of Deficiency

In 1999 WNI requested to use institutional controls (ICs) on private properties in lieu of corrective actions to limit potential exposure of humans to contamination from the Split Rock Site. The bases for this approach and the specification of the boundaries for the institutional controls are in the ground water and transport model. In its application, WNI stated that "… present concentrations have been demonstrated to be decreasing in a stable manner." However, recent data shows increasing concentration of nitrates in SWAB-2 and increasing aluminum, ammonia, cadmium, and nickel in Well-4R. Selenium has also shown periodic spikes in the NW Valley. Therefore, the statements in the application and results of ground water model predictions are not consistent with recent data, and do not appear to support limiting exposure at the current IC boundary.

Basis of the Request

NRC approved the specific location of the IC boundary and extent of the covenants on private property based on the predictions of contaminant spread from the WNI ground water and contaminant transport models. Current sampling data is different from the predictions.

Formulation of RAI

WNI should update its ground water and transport models to reflect recent data and to demonstrate that the concentrations at the proposed IC boundaries will be protective (i.e. meet maximum contaminant levels or background).

RAI 3

Description of Deficiency

In 1999 WNI identified Well 5 and WN-21 as the POC wells for the site. It states Well-5, which is approximately 230 feet deep, is screened over a broad portion of the aquifer in the center of the existing and future site constituent flow path. Table B-2-3 of Appendix B to the 1999 Site Groundwater Characterization and Evaluation Report states that well WN-21 is approximately 322 feet deep with a screened interval from 2.7 feet below ground surface to 322 feet below ground surface. Therefore, these wells intersect all transmissive zones and provide an average concentration for COC's over the screened interval that may not be representative of the uppermost aquifer.

Basis of the Request

Appendix A to 10 CFR Part 40 definesPOC as "the site-specific location in the uppermost aquifer where the ground-water protection standard must be met."

Formulation of RAI

WNI should describe the current and historic sampling procedures used for groundwater sampling (e.g., high-flow/low-flow, sampling depth) and explain how the current groundwater samples are representative of POC concentrations. Alternately, WNI should define a sampling scheme it will use to identify concentrations in the uppermost aquifer at the POC wells.
In addition, WNI should provide a representative plot of current ground water depth throughout the area.

RAI 4

Description of Deficiency

The WNI license specifies the location and frequency of sampling ground water and surface water at the Split Rock site. It also specifies trigger levels of contaminants that, if exceeded,

require corrective action. The draft LTSP from DOE/LM proposes to reduce the number and frequency of samples, and eliminates the trigger values and responses. However, the proposed sampling plan does not appear to be fully risk informed.

Basis of the Request

All site specific licensing decisions based on the criteria in Appendix A to Part 40, or alternatives proposed by licensees, will take into account the risk to the public health and safety and the environment with due consideration to the economic costs involved and any other factors the Commission determines to be appropriate. In implementing this Appendix, the Commission will take into account the state of technology and the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to the utilization of atomic energy in the public interest.

Formulation of RAI

Based on its updated ground water and contaminant transport models for the site, WNI should define a risk-based, cost effective sampling program for ground- and surface water and other activities it will fund to ensure adequate protection of public health and safety during the compliance period. The proposed plan should include locations, frequencies, and constituent analyses, as appropriate.